REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are requested.

By this amendment, claims 99, 101, 103, 105, 107, and 109 have been canceled, claims 1-50 were previously canceled, and claims 98, 100, 102, 104, 106, and 108 have been amended. Claims 98, 100, 102, 104, 106, and 108 are pending.

Claims 98-109 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura (US 5,168,509)(hereafter referred to as Nakamura). This rejection is traversed.

The present application discloses a multi-level signal transmission system that can be utilized in several technologies including terrestrial and satellite television broadcasting, magnetic recording and playback, and mobile telephones. The multi-level signal transmission system of the present invention can utilize several different modulation techniques, including QAM and PSK (see page 152, lines 9-14).

The present invention also allows mobile stations, such as mobile telephones, to freely select from among a plurality of transmission capabilities (see e.g., page 141, lines 23-25). Conventionally, the frequency utilization efficiency of cellular telephones was uniformly set for an entire geographic region irrespective of the actual traffic amount (see page 136, lines 2-6). However, according to the present invention, a transmission capability with a lower frequency utilization efficiency can be selected, for example, in areas having low traffic transmission conditions or if the battery is almost worn out (see, e.g., page 136, lines 17-25, page 137, lines 20-22, and page 141, lines 16-18), whereas a transmission capability with a higher frequency utilization efficiency can be selected, for example, in areas having high traffic transmission conditions or to reduce transmission time and resulting cost (see, e.g., page 136, lines 17-25, page 137, lines 15-20, page 141 line 27-page 142, line 2).

Thus, as shown in Fig. 120(b), and discussed from page 140, line 23 to page 142, line 10, the present invention provides a TDMA allocation scheme including time slots or channels for a plurality of transmission capabilities from which mobile or base stations can freely select. In the example shown in Fig. 120(b) channels such as 788e, 788f, 788g, 788h, and 788r are channels that provide a transmission capability with a relatively lower frequency utilization efficiency. These

channels save power by using a 4 level QAM modulation. Channels such as 788a-788d, and 788p, 788q, 788s, and 788t provide another transmission capability with a higher frequency utilization efficiency than the 4 level QAM channels. Channels 788a-788d, and 788p, 788q, 788s, and 788t use 16 level QAM and have a time slot width that is approximately one half that of the 4 level QAM channels. Channels such as 788i-788n provide a third transmission capability with an even higher frequency utilization efficiency. Channels 788i-788n use 64 level QAM and have a time slot width that is approximately one third that of the 4 level QAM channels. According to the present invention, mobile stations such as mobile telephones are able to freely select from among these plural transmission capabilities.

As discussed above, the modulation methods of the respective plural transmission capabilities of the present invention are distinguished from each other by the level of QAM or PSK. In the examples discussed above, the three transmission capabilities are realized by 4, 16, and 64 level QAM modulation. For a mobile or base station to be able to freely select a transmission capability from the plurality of transmission capabilities of the present invention, the selective parameter is the level of modulation, e.g., 4, 16, or 64.

Accordingly, Claims 98 and 100 as amended recite that "the modulator is operable to select a value of n from a plurality of values of n according to a transmission condition," where the modulation is an n-level PSK or QAM modulation. Similarly, claims 104 and 106 have been amended to recite that "the modulating includes selecting a value of n from a plurality of values of n according to a transmission condition," and claims 102 and 108 have been amended to recite that "the value of n is selected from a plurality of values of n according to a transmission condition."

The Examiner acknowledges that Nakamura does not teach a modulator capable of changing the value of n. According to the Examiner, Nakamura discloses that "the 'level' of modulation is selective" in column 1, lines 34-35. Based on this assertion, the Examiner concludes that "it would have been obvious to one skilled in the art that some kind of mechanism, as a design choice, would be utilized of such selection." However, it is submitted that this conclusion of obviousness by the Examiner is incorrect and is not supported by the prior art of record.

As discussed above, the Examiner seems to suggest that Nakamura teaches a modulator wherein the level of modulation is selective, that Nakamura simply fails to teach a *mechanism* for the modulator to accomplish the selection, and that it would be a simple design choice for a person having ordinary skill in the art to utilize "some kind of mechanism" to make the selection. This is not a fair reading of the Nakamura reference.

The premise in the Examiner's reasoning is that Nakamura, in column 1, lines 34-35, teaches that the level of modulation is selective. Column 1, lines 34-35, of Nakamura reads in part "if 'm' is selected to be 16 (n=8), this multi-level QAM signal is equal to 256 pieces of QAM signals having 256 signal points." This is a simple statement about the very nature of QAM modulation and has nothing to do with a system having a selectable QAM level. Moreover, this statement merely points out that there exist many levels of QAM. As set forth in column 1, line 21, of Nakamura, "n" is the data bit number, and as set forth in column 1, lines 33-34, a multi-level QAM signal has "m^2 ($=2^n$)" signal points. In an m level QAM modulation, an n bit signal is represented by 2^n or m^2 signal points. Thus, for example, if n=4 then m=16, and a 16 QAM modulation represents the 4 bit signal with 16 signal points. Likewise, a 64 QAM modulation represents a 6 bit signal with 64 signal points, and a 256 QAM modulation represents an 8 bit signal with 256 signal points. Nakamura has merely pointed out that if m is selected to be 16 then the QAM has 256 signal points. In some sense Nakamura has pointed out that one can "select" to use 256 QAM. However, this in no way suggests that level of QAM in the apparatuses of Nakamura is selectable, or that the apparatuses can freely select the level of modulation from a plurality of levels.

The Nakamura patent is directed to error correction for QAM systems, not to QAM systems having a selective QAM level. Nakamura discloses several embodiments of different QAM levels, but does not disclose or suggest that the QAM level in any particular embodiment is selectable. For example, Nakamura discloses several 64 QAM and 256 QAM systems, but nowhere suggests that any of the QAM systems can freely select whether the QAM is 64 or 256. Nakamura simply does not suggest that the level of QAM is selective in any of the disclosed modulation systems. Therefore, it would not have been obvious to a person having ordinary skill in the art to utilize "some

kind of mechanism, as a design choice" to select the level of QAM in any of the modulation systems of Nakamura.

In view of the above, it should be clear that Nakamura does not disclose or suggest that "the modulator is operable to select a value of n from a plurality of values of n according to a transmission condition," (where the modulation is an n-level PSK or QAM modulation) as recited in claims 98 and 100, or that "the modulating includes selecting a value of n from a plurality of values of n according to a transmission condition" as recited in claims 104 and 106, or that "the value of n is selected from a plurality of values of n according to a transmission condition" as recited in claims 102 and 108. Accordingly, claims 98, 100, 102, 104, 106, and 108 are allowable over the prior art of record.

It is respectfully submitted that the present application should be allowed for the above reasons.

Respectfully submitted,

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